

DESIGN FOR A
CRADLE TO CRADLE[®]
FUTURE





MBDC founders
William McDonough
and Michael Braungart

*Our goal is a delightfully
diverse, safe, healthy
and just world, with
clean air, water, soil and
power—economically,
equitably, ecologically
and elegantly enjoyed.*

CRADLE TO CRADLE

Management theorist Peter Drucker has said that it is a manager's job to do something the right way—to be efficient—but it is an executive's job to do the right thing—to be effective.

Conventional reporting of an organization's environmental and social performance has been characterized by efficiency goals, strategies and metrics directed toward being "less bad." While this approach can benefit the bottom line through reduced expenses and liabilities, it does not necessarily provide a path toward true industry leadership, innovation or creative redesign.

The *Cradle to Cradle*® design framework moves beyond the goal of only reducing an organization's negative impacts (**eco-efficiency**), to provide an engaging vision for executives and comprehensive strategies for managers to create a wholly positive footprint on the planet—environmental, social and economic (**eco-effectiveness**).



Developed by architect William McDonough and chemist Michael Braungart, *Cradle to Cradle* design recognizes the complex, abundant processes of nature's ecosystems—the 'biological metabolism'—but also articulates a parallel 'technical metabolism' for human industry. Both metabolisms can be characterized by eco-effective, continuous flows of materials, energy and water, and whole-community mutualism.

Toward this end, product ingredients are evaluated for their human and environmental health attributes and their potential to be safely cycled—either as 'biological nutrients' that are derived from the biosphere and can biodegrade to build healthy soil, or as 'technical nutrients' that are recyclable materials and can be returned to high-valued uses in new products without contaminating the biosphere. In addition, systems are established to continuously and cost-effectively recover these materials following product use and safely biodegrade or recycle them. Finally, operations are powered by 100% renewable energy, maximize water quality and water efficiency, and respect people and ecosystems.

This booklet presents a *Cradle to Cradle* vision of a "sustaining future" to which an executive can commit an organization, along with eco-effective and eco-efficient strategies for managers working to achieve that vision in a profoundly economical and revenue generating manner.

Materials as Nutrients

The United States Postal Service uses the Cradle to Cradle® design framework as a tool for innovation and supply chain engagement. The USPS annually produces 28 billion packaging and stamp products that are Cradle to Cradle Certified™ through MBDC. Over 300 suppliers have provided composition data—to assess the human and environmental health attributes of over 500 packaging materials and 2000 individual ingredients—and are working to continuously improve their material formulations.



EXECUTIVE VISION

We will regard materials as nutrients, for safe, continuous cycling.



"The switch to the high quality materials was cost neutral... Consumers will not see any change in price, service or convenience."

— U.S. Postal Service:
Delivering a Green Message

MANAGEMENT STRATEGY

Develop a plan to design products and optimize ingredients to safely, continuously cycle materials as nutrients.

Assess existing materials and process chemicals for their human and environmental health attributes.

Identify ingredients to optimize and work with suppliers to reformulate them.

Where hazardous ingredients cannot be replaced immediately, ensure they are safely recovered and recycled, while continuing R&D for alternatives.

Select ingredients for 'biological nutrient' materials that can be recycled or can biodegrade and improve soil health.

Select ingredients for 'technical nutrient' materials so they are fully recyclable and can be safely returned to high-valued uses in new products.

Material Reutilization

Shaw Industries developed commercial carpet tiles that do not contain PVC and can be separated into component materials and fully recycled, again and again. Each carpet tile is labeled with a toll-free number for customers to call and have used tiles picked up for carpet-to-carpet recycling. Shaw also worked with MBDC to assess the human and environmental health attributes of all ingredients and identify preferred substitutes. Shaw is expanding the Cradle to Cradle® design framework across its commercial and residential product lines.



EXECUTIVE VISION

We will maintain continuous flows of biological and technical nutrients.



"When you're developing a product, begin with the end in mind. Think about at the very beginning what is that product going to be like when it comes off the floor and how is the best way to efficiently take that apart and reuse the materials and components in that product."

— Jeff West, LEED AP, Director of Sustainability—Commercial Division, Shaw Industries, Inc.

MANAGEMENT STRATEGY

Create a plan to develop systems to recover used products and safely, continuously cycle materials as nutrients.

Design products as biological or technical nutrients, or a combination of biodegradable and recyclable materials that can be easily disassembled.

Actualize systems to recover products following use and safely manage all component materials.

Biodegrade biological nutrients to build healthy soil and recycle technical nutrients into high-valued uses within new products.

Renewable Energy

Companies in the office furniture industry—from early adopters Herman Miller and Steelcase, to other brands such as Allsteel and Haworth—use the Cradle to Cradle® framework to define and improve their sustainability footprint. For example, Herman Miller uses renewable energy for its worldwide operations, employing RECs and purchase agreements with energy generators. Steelcase is the sole sponsor of a wind farm in Texas (pictured here) producing 35 million kWh of clean electricity each year—the largest wind investment in the furniture industry.

 **Herman Miller**

Allsteel®

HAWORTH®



EXECUTIVE VISION

We will power all operations with 100% renewable energy.

Steelcase®

"Our commitment to the Wege Wind Energy Farm and powering our operations with 100% renewable energy is a complement to our on-going efforts to reduce our own energy consumption. Steelcase is proud to make the project a reality in what we hope will inspire more companies to invest in green power both nationally and internationally."

— Nancy Hickey, Senior VP
& Chief Administrative Officer,
Steelcase, Inc.

MANAGEMENT STRATEGY

Develop and implement your plan for leveraging energy efficiency to transition to being a renewably powered enterprise.

Collect data on your current mix of electricity sources and your potential for generating renewable energy on-site or nearby.

Implement energy efficiency projects and invest financial savings in your renewable energy program.

Continuously monitor all local and remote opportunities for using renewable energy and begin implementing as soon as cost-effective.

Complete your shift to powering your operations with 100% renewable energy, as costs and infrastructure allow.

Water Quality & Efficiency

MBDC has assisted various clients with efforts to optimize water quality and efficiency. Our first client, Designtex (a Steelcase company), successfully eliminated hazardous ingredients from textile manufacturing and the effluent now sustains water quality rather than degrades it. The company Method is dedicated to “cleaning up the way we clean” and pursuing the Cradle® framework through product certification, operational enhancements and commitment to the larger vision. One of Method’s latest products is a laundry detergent formulated to contain much less water in the bottle (eco-efficiency) and assessed using criteria for Cradle to Cradle Certification (eco-effectiveness).



EXECUTIVE VISION

We will celebrate water as a precious resource.

method™

“Obtaining external verification from MBDC, the people who wrote the book on Cradle to Cradle® design, reinforces the work we’re doing to make our products safe for people and the environment, and it reflects our authentic mission of sustainability at a time when many companies talk about being green.”

— Adam Lowry, Co-founder & Chief Greenskeeper, Method

MANAGEMENT STRATEGY

Define a trajectory from signaling your intention to maximize water quality and water efficiency, to achieving that goal.

Adopt a set of principles to guide your efforts in protecting and enhancing water stewardship.

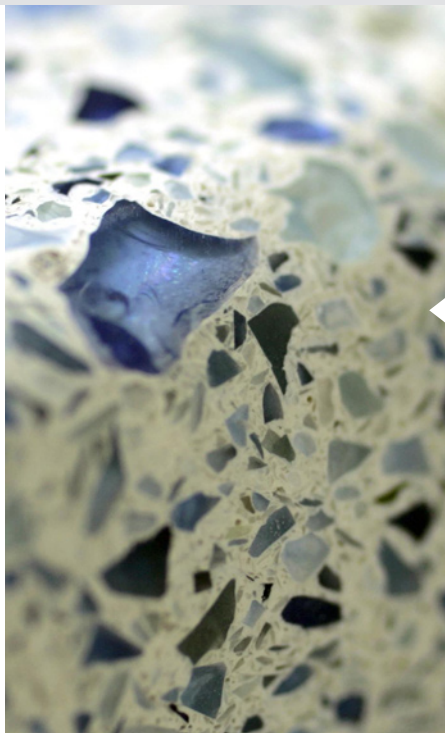
Conduct a water audit of your facilities, to characterize current water sources, discharges and impacts. Also measure your products’ impacts on water.

Implement process improvements to enhance effluent water quality and/or reduce water consumption, and monitor performance over time.

Demonstrate water stewardship throughout your facilities and products by achieving closed-loop flows, promoting healthy ecosystems and addressing local impacts.

Social Responsibility

IceStone's co-founders believe that business can be a tool for social and environmental sustainability, which the company demonstrates through its operations and products. For example, manufacturing is housed in a renovated, day-lit factory providing a favorable working environment for employees, and the company works with various organizations to promote green-collar job creation. IceStone is a Founding B Corporation, along with Method, and they have been joined by more recent B Corporation adopters Highland Craftsmen and US Tile.



EXECUTIVE VISION

*We will celebrate
all people and
natural systems.*

IceStone®

"Our Gold-level Cradle to Cradle Certified™ status was a company-wide effort. We set the bar very high for ourselves, and take pride knowing what it took to be the first and only durable surface in the world to achieve this. In fact, everything we do at IceStone around our social and environmental initiatives requires the effort of the entire IceStone team—something which motivates us to continually innovate."

— Miranda Magagnini, Co-CEO, IceStone

MANAGEMENT STRATEGY

Develop a process and timeline to realize your organization's social responsibility vision.

Meet minimum industry and regulatory standards for health, safety and ethical performance.

Engage employees through open, two-way communication that integrates their creativity, ideas and feedback.

Obtain third party social accreditation for your facilities and leverage your suppliers to implement their own programs.

Become a partner to the communities and regions within which you operate, as well as to interest groups focused on broader issues.

Demonstrate leadership by honoring employees, customers, communities and ecosystems, and report publicly on your ongoing achievements and challenges.

William McDonough

William McDonough, FAIA, Int. FRIBA is an architect, designer and pioneer in the sustainability movement. He is a world-changing thought leader and co-creator of the Cradle to Cradle approach to design. McDonough's counsel is sought by political, business and academic leaders world-wide in all sectors of human activity including venture capital, government policy, city and building design, product manufacturing, industrial systems, economic systems and new business models, energy and water systems, and material reutilization of biological and technical nutrients.

In 1996, McDonough became the only individual to receive the Presidential Award for Sustainable Development, the highest environmental honor ever given in the U.S. In 2003, he received the Presidential Green Chemistry Challenge Award for his work in science and industrial production. In 2004, he received the U.S. National Design Award, the highest design award in the United States. In 1999, McDonough was named "Hero of the Planet" by Time magazine, and in 2007, "Hero of the Environment."

McDonough founded William McDonough + Partners, an architecture and community design firm in 1981, and co-founded MBDC in 1995. In 2010, McDonough and Dr. Michael Braungart donated their Cradle to Cradle Certification program for public benefit by founding the Cradle to Cradle Products Innovation Institute™. McDonough and Braungart co-authored two of the most recognized books of the sustainable design movement: *The Hannover Principles: Design for Sustainability* (1993) and *Cradle to Cradle: Remaking the Way We Make Things* (2002).

Michael Braungart

Michael Braungart is a chemist and founder of EPEA International Umweltforschung GmbH in Hamburg, Germany, and co-founder of MBDC. Dr. Braungart's work has been published in numerous journals on science, public affairs, design and environment in Europe and the US. He and William McDonough co-authored *The Hannover Principles: Design for Sustainability*, published in 1992, and *Cradle to Cradle: Remaking the Way We Make Things*, published in 2002 by North Point Press.

Dr. Braungart is currently a professor of Process Engineering at Universität Lüneburg (Germany). Recently, he accepted a visiting professorship at the Darden School of Business, lecturing on such topics as eco-efficiency and eco-effectiveness, Cradle to Cradle® design and Intelligent Materials Pooling. Dr. Braungart also serves as Scientific Manager of the Hamburg Environmental Institute, the nonprofit research center which produces the "Top 50 Study": an evaluation of the environmental performance of the world's largest chemical companies.

Dr. Braungart's work addresses topics from particles to policy. He has initiated worldwide scholarly and scientific inquiry into the adverse environmental and physiological impacts of industrially-produced consumer goods. Dr. Braungart currently concentrates his efforts at MBDC and EPEA by working with innovative companies on issues of materials assessment, waste and energy balances, Cradle to Cradle design, design for disassembly, and new product design.

William McDonough

Speaking & Consulting

Charlottesville, Virginia

+1.434.979.1111

www.mcdonough.com

msanders@mcdonough.com

Michael Braungart

Speaking & Consulting

Hamburg, Germany

+49.40.8797.62.0

www.braungart.com

braungart@braungart.com

MBDC

(McDonough Braungart Design Chemistry)

*Cradle to Cradle® Consulting &
Assessment for Product Certification*

Charlottesville, Virginia

+1.434.295.1111

www.mbdc.com

info@mbdc.com

William McDonough + Partners

Architecture, Community Design & Consulting

Charlottesville, Virginia · +1.434.979.1111

San Francisco, California · +1.415.743.1111

Amsterdam, the Netherlands · +31(0)20.509.11.22

www.mcdonoughpartners.com

clients@mcdonough.com

media@mcdonough.com

EPEA Internationale Umweltforschung GmbH

*Cradle to Cradle Science &
Consulting for Certification*

Hamburg, Germany

+49.40.4313.49.0

www.epea.com

epea@epea.com

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